

REMARKS

The Office Action dated November 10, 2009 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1-33 and 35-41 are currently pending in the application. Claim 34 was previously cancelled. Applicants thank the Examiner for the allowance of claims 39-41. Claims 1, 29, 37, and 38 have been amended to more particularly point out and distinctly claim the subject matter of the invention. No new matter has been added. Therefore, claims 1-33 and 35-38 are respectfully submitted for consideration.

Claim Rejections Under 35 U.S.C. § 102

The Office Action rejected claims 1-2, 22-23, and 26-38 under 35 U.S.C. § 102(b) as allegedly being anticipated by Brunner (U.S. Patent No. 7,039,368) (“Brunner”).

As a threshold matter, Applicants respectfully submit that Brunner is not valid prior art. Brunner was patented on May 2, 2006, which is later than that the priority date of the present application (i.e., March 22, 2003). Thus, Brunner is not valid prior art under 35 U.S.C. § 102(a) or § 102(b). Additionally, Brunner is a national stage application of International Application No. PCT/DE01/01970, filed on May 21, 2001. However, International Application No. PCT/DE/01970 was published in German, rather than English, and thus, Brunner is also not valid prior art under 35 U.S.C. § 102(e).

Nevertheless, because it appears that the Examiner could have properly cited to International Application No. PCT/DE01/01970, in an effort to expedite prosecution,

Applicants will treat the rejection as if the Examiner has cited to International Application No. PCT/DE01/01970, rather than Brunner. Applicants respectfully submit that said claims recite subject matter neither disclosed nor suggested in Brunner.

Claim 1, upon which claims 2-28 are dependent, recites a method, which includes determining, in an operational entity of a communications network, at least two transmit diversity branches for use based on estimated channel properties of at least two transmit diversity branches of a transmitter. The method further includes determining, in the operational entity of the communication network, a transmit diversity order of the at least two transmit diversity branches.

Claim 29, upon which claims 30-33 and 35-36 are dependent, recites an apparatus, which includes a processor, and a memory including computer program code. The memory and the computer program code configured to, with the processor, cause the apparatus at least to establish estimated channel properties of at least two transmit diversity branches, determine, in an operational entity of a communications network, at least two transmit diversity branches for use based on the estimated channel properties, and determine, in the operational entity of the communications network, a transmit diversity order of the at least two transmit diversity branches.

Claim 37 recites an apparatus, which includes establishing means for establishing estimated channel properties of at least two transmit diversity branches. The apparatus further includes determining means for determining, in an operational entity of a communications network, at least two transmit diversity branches for use based on the estimated channel properties. The apparatus further includes determining means for

determining, in the operational entity of the communication network, a transmit diversity order for the at least two transmit diversity branches.

Claim 38 recites a computer program embodied on a computer readable medium, the computer readable medium storing code comprising computer executable instructions configured to perform determining, in an operational entity of a communications network, at least two transmit diversity branches for use based on estimated channel properties of at least two transmit diversity branches of a transmitter, and determining, in the operational entity of the communications network, a transmit diversity order of the at least two transmit diversity branches.

As will be discussed below, Brunner fails to disclose or suggest all of the elements of the claims, and therefore fails to provide the features discussed above.

Brunner describes a method which allows a transmitter in a radio communications system to control a downlink beam based on the current transmission and reception situation. The method can be carried out in a base station in a radio communications system which has an antenna device with a number of antenna elements. In the method, a received uplink signal from a subscriber station is investigated for the existence of phase correlation between components of the uplink signal. If phase correlation is established, it is determined whether there is a direct transmission link between the base station and the subscriber station. If there is a direct transmission link the downlink signal is transmitted along the direct transmission path. If no direct transmission link is established, then the downlink signal is transmitted simultaneously at least two of the transmission paths. However, if no phase correlation is established, the downlink signal

is transmitted non-directionally, potentially using at least one diversity technique (see Brunner at col. 3, line 36 – col. 4, line 16; Figure 3).

Applicants respectfully submit that Brunner fails to disclose, teach, or suggest, all of the elements of the present claims. For example, Brunner fails to disclose, teach, or suggest, at least, “determining, in the operational entity of the communication network, a transmit diversity order of the at least two transmit diversity branches,” as recited in independent claim 1, and similarly recited in independent claims 29, 37, and 38.

As described above, Brunner describes investigating a received uplink signal from a subscriber station for the existence of a direction transmission link between the base station and the subscriber station. If no direct transmission is established, a downlink signal is simultaneously transmitted via at least two transmission paths with the smallest attenuation (see Brunner at col. 6, lines 50-63). Furthermore, Brunner describes investigating the received uplink signal for the existence of phase correlation. If no phase correlation exists, the downlink signal is transmitted using one or more diversity techniques (see Brunner at col. 7, lines 19-21). Nowhere does Brunner disclose or suggest determining an order of at least two transmit diversity branches. Instead, Brunner merely describes simultaneous transmission via multiple transmission paths.

Therefore, Brunner fails to disclose, teach, or suggest, all of the elements of independent claims 1, 29, 37, and 38.

Claims 2, 22-23, and 26-28 depend upon claim 1. Claims 30-33 and 35-36 depend upon independent claim 29. Thus, Applicants respectfully submit that claims 2, 22-23,

26-28, 30-33, and 35-36 should be allowed for at least their dependence upon independent claims 1 and 29, respectively, and for the specific elements recited therein.

Accordingly, Applicants respectfully request that this rejection be withdrawn.

Claim Rejections Under 35 U.S.C. § 103

The Office Action rejected claim 3 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Brunner, in view of Rappaport (U.S. Patent No. 5,233,628) (“Rappaport”). The Office Action took the position that Brunner discloses all the elements of the claim with the exception of “wherein the determining comprises using the transmit diversity performance indicator taking into account one or more of the following: small-scale fading statistics, and specific channel coding.” The Office Action then cited Rappaport as allegedly curing the deficiencies of Brunner (see Office Action at page 6). Applicants respectfully submit that said claim recites subject matter neither disclosed nor suggested in Brunner and Rappaport.

Brunner is described above. Rappaport describes a communications stimulation system that allows a user to perform a quantitative or subjective test of digital baseband devices over wireless channels using actual measured or modeled propagation data. The digital wireless communication simulation system is capable of simulating the transient nature of channels and radio hardware so that loss of synchronization can be included in the simulation (see Rappaport at Abstract).

Claim 3 depends upon independent claim 1. As discussed above, Brunner does not disclose, teach, or suggest all of the elements of independent claim 1. Furthermore,

Rappaport does not cure the deficiencies in Brunner, as Rappaport also does not disclose, teach, or suggest, at least, “determining, in the operational entity of the communication network, a transmit diversity order of the at least two transmit diversity branches,” as recited in independent claim 1. Thus, the combination of Brunner and Rappaport does not disclose, teach, or suggest all of the elements of claim 3. Additionally, claim 3 should be allowed for at least its dependence upon independent claim 1, and for the specific elements recited therein.

The Office Action rejected claim 4 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Brunner, in view of Veeravalli (U.S. Patent No. 6,097,956) (“Veeravalli”). The Office Action took the position that Brunner discloses all the elements of the claim with the exception of “wherein the ... determining the at least one transmit diversity branch for use comprises taking into account a required outage probability.” The Office Action then cited Veeravalli as allegedly curing the deficiencies of Brunner (see Office Action at page 7). Applicants respectfully submit that said claim recites subject matter neither disclosed nor suggested in Brunner and Veeravalli.

Brunner is described above. Veeravalli describes calculation of the probability of outage for a cell within a CDMA network utilized to relate cell coverage to cell capacity. Based on a desired probability of outage, the coverage of the cell may be calculated for an average number of users within the cell (see Veeravalli at Abstract).

Claim 4 depends upon independent claim 1. As discussed above, Brunner does not disclose, teach, or suggest all of the elements of independent claim 1. Furthermore, Veeravalli does not cure the deficiencies in Brunner, as Veeravalli also does not disclose,

teach, or suggest, at least, “determining, in the operational entity of the communication network, a transmit diversity order of the at least two transmit diversity branches,” as recited in independent claim 1. Thus, the combination of Brunner and Veeravalli does not disclose, teach, or suggest all of the elements of claim 4. Additionally, claim 4 should be allowed for at least its dependence upon independent claim 1, and for the specific elements recited therein.

The Office Action rejected claims 5, 6, 8, 10, and 11 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Brunner, in view of Lindell (U.S. Patent No. 5,524,275) (“Lindell”). The Office Action took the position that Brunner discloses all the elements of the claims with the exception of “wherein the ... determining comprises determining the at least one transmit diversity branch for use based on said estimated channel properties comprising expected powers of transmit diversity branches,” and other limitations. The Office Action then cited Lindell as allegedly curing the deficiencies of Brunner (see Office Action at pages 7-9). Applicants respectfully submit that said claims recite subject matter neither disclosed nor suggested in Brunner and Lindell.

Brunner is described above. Lindell describes a radio transmitter output power controller which automatically restricts the maximum transmitting time during an averaging time so that the average power remains below an acceptable level. The maximum transmitter output power may be automatically reduced to a lower level if and when a predetermined average power level is approached (see Lindell at Abstract).

Claims 5, 6, 8, 10, and 11 depend upon independent claim 1. As discussed above, Brunner does not disclose, teach, or suggest all of the elements of independent claim 1.

Furthermore, Lindell does not cure the deficiencies in Brunner, as Lindell also does not disclose, teach, or suggest, at least, “determining, in the operational entity of the communication network, a transmit diversity order of the at least two transmit diversity branches,” as recited in independent claim 1. Thus, the combination of Brunner and Lindell does not disclose, teach, or suggest all of the elements of claims 5, 6, 8, 10, and 11. Additionally, claims 5, 6, 8, 10, and 11 be allowed for at least their dependence upon independent claim 1, and for the specific elements recited therein.

The Office Action rejected claim 9 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Brunner, in view of Conklin (U.S. Patent No. 6,415,283) (“Conklin”). The Office Action took the position that Brunner discloses all the elements of the claim with the exception of “the ... evaluating comprises evaluating said transmit diversity performance indicator for transmit diversity branch sets using a tree structure, a transmit diversity branch set relating to a child node having less transmit diversity branches than a transmit diversity branch set relating to a parent node of the child node.” The Office Action then cited Conklin as allegedly curing the deficiencies of Brunner (see Office Action at pages 9-10). Applicants respectfully submit that said claim recites subject matter neither disclosed nor suggested in Brunner and Conklin.

Brunner is described above. Conklin describes a cluster processing system that determines at least one focal node on a hierarchically arranged tree structure of nodes based on attributes of a data set. The data set comprises a plurality of data set attributes with associated weight values. The cluster processing system selects a set of nodes from the tree structure with tree structure attributes that correspond with the data set attributes,

and then assigns quantitative values to nodes in the set of nodes from the weight values in the data set. At least one cluster of nodes are selected, based on proximity in the tree structure, and at least one focal node on the tree structure for the cluster of nodes is selected. (see Conklin at Abstract).

Claim 9 depends upon independent claim 1. As discussed above, Brunner does not disclose, teach, or suggest all of the elements of independent claim 1. Furthermore, Conklin does not cure the deficiencies in Brunner, as Conklin also does not disclose, teach, or suggest, at least, “determining, in the operational entity of the communication network, a transmit diversity order of the at least two transmit diversity branches,” as recited in independent claim 1. Thus, the combination of Brunner and Conklin does not disclose, teach, or suggest all of the elements of claim 9. Additionally, claim 9 should be allowed for at least its dependence upon independent claim 1, and for the specific elements recited therein.

The Office Action rejected claims 12-14, 16, and 18-19 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Brunner, in view of Mitra (U.S. Patent No. 5,956,649) (“Mitra”). The Office Action took the position that Brunner discloses all the elements of the claims with the exception of “wherein the ... determining comprises determining the at least one transmit diversity branch for use based on the estimated channel properties comprising second order statistics of channel coefficients of transmit diversity branches,” and other elements. The Office Action then cited Mitra as allegedly curing the deficiencies of Brunner (see Office Action at pages 10-12). Applicants

respectfully submit that said claims recite subject matter neither disclosed nor suggested in Brunner and Mitra.

Brunner is described above. Mitra describes a method and apparatus that use a set of parameters characterizing an interference signal at a base unit for determining power levels for signals transmitted from a communications device to the base unit. The set of parameters comprises second or higher order statistics characterizing the interference signal, and the parameters are used to determine a desired power level for signals received at the base unit. The desired power level is communicated to a communications device via a pilot signal transmitted by the base unit at a predetermined level. The predetermined level and the power of the received pilot signal are used to compute a path gain between the base unit and communications device. The path gain and desired power level are then used to determine the power level of signals transmitted from the communications device to the base unit (see Mitra at Abstract).

Claims 12-14, 16, and 18-19 depend upon independent claim 1. As discussed above, Brunner does not disclose, teach, or suggest all of the elements of independent claim 1. Furthermore, Mitra does not cure the deficiencies in Brunner, as Mitra also does not disclose, teach, or suggest, at least, “determining, in the operational entity of the communication network, a transmit diversity order of the at least two transmit diversity branches,” as recited in independent claim 1. Thus, the combination of Brunner and Mitra does not disclose, teach, or suggest all of the elements of claims 12-14, 16, and 18-19. Additionally, claims 12-14, 16, and 18-19 should be allowed for at least their dependence upon independent claim 1, and for the specific elements recited therein.

The Office Action rejected claim 17 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Brunner, in view of Mitra, and further in view of Conklin. The Office Action took the position that the combination of Brunner and Mitra discloses all the elements of the claims with the exception of “wherein the ... evaluating comprises evaluating said transmit diversity performance indicator for transmit diversity branch sets using a tree structure, a transmit diversity branch set relating to a child node having less transmit diversity branches than a transmit diversity branch set relating to a parent node of the child node.” The Office Action then cited Conklin as allegedly curing the deficiencies of Brunner and Mitra (see Office Action at pages 12-13). Applicants respectfully submit that said claim recites subject matter neither disclosed nor suggested in Brunner and Mitra.

Brunner, Mitra, and Conklin are described above. Claim 17 depends upon independent claim 1. As discussed above, the combination of Brunner and Mitra does not disclose, teach, or suggest all of the elements of independent claim 1. Furthermore, Conklin does not cure the deficiencies in Brunner and Mitra, as Conklin also does not disclose, teach, or suggest, at least, “determining, in the operational entity of the communication network, a transmit diversity order of the at least two transmit diversity branches,” as recited in independent claim 1. Thus, the combination of Brunner, Mitra, and Conklin does not disclose, teach, or suggest all of the elements of claim 17. Additionally, claim 17 should be allowed for at least its dependence upon independent claim 1, and for the specific elements recited therein.

The Office Action rejected claims 24-25 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Brunner, in view of Whinnet (U.S. Patent No. 6,317,411) (“Whinnet”). The Office Action took the position that Brunner discloses all the elements of the claims with the exception of “wherein estimating channel properties using channel coefficients at a receiver.” The Office Action then cited Whinnet as allegedly curing the deficiencies of Brunner (see Office Action at pages 13-14). Applicants respectfully submit that said claims recite subject matter neither disclosed nor suggested in claims 24-25.

Brunner is described above. Whinnett describes a method for wireless data communication between a base station and a subscriber unit in a wireless communication system. Groups of symbols of an input data stream are commutated to produce a plurality of commutated data streams. The plurality of commutated data streams are then transformed to produce a plurality of transformed data streams. Next, each transformed data stream is spread with a selected one of a plurality of spreading codes to produce a plurality of antenna signals. Finally, each of the plurality of antenna signals is transmitted using a selected one of a plurality of spaced apart antennas, wherein the plurality of spaced apart antennas are spaced apart to provide transmit diversity. In one embodiment, the transform is a space-time transform (see Whinnett at Abstract).

Claims 24-25 depend upon independent claim 1. As discussed above, Brunner does not disclose, teach, or suggest all of the elements of independent claim 1. Furthermore, Whinnett does not cure the deficiencies in Brunner, as Whinnett also does not disclose, teach, or suggest, at least, “determining, in the operational entity of the

communication network, a transmit diversity order of the at least two transmit diversity branches,” as recited in independent claim 1. Thus, the combination of Brunner and Whinnett does not disclose, teach, or suggest all of the elements of claims 24-25. Additionally, claims 24-25 should be allowed for at least their dependence upon independent claim 1, and for the specific elements recited therein.

Allowable Subject Matter

The Office Action indicated that claims 7, 15, and 20-21 would be allowable if rewritten to include all of the limitations of the base claims and any intervening claims. Claims 7, 15, and 20-21 depend upon independent claim 1, and recite additional subject matter. Accordingly, it is respectfully requested that claims 7, 15, and 20-21 be allowed.

The Office Action indicated that claims 39-41 have been allowed. Applicants respectfully thank the Examiner for the allowance of the claims.

Based on the above discussion, Applicants respectfully submit that the cited prior art references fail to disclose or suggest all of the elements of the claimed invention. These distinctions are more than sufficient to render the claimed invention unanticipated and unobvious. It is therefore respectfully requested that all of claims 1-33 and 35-38 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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